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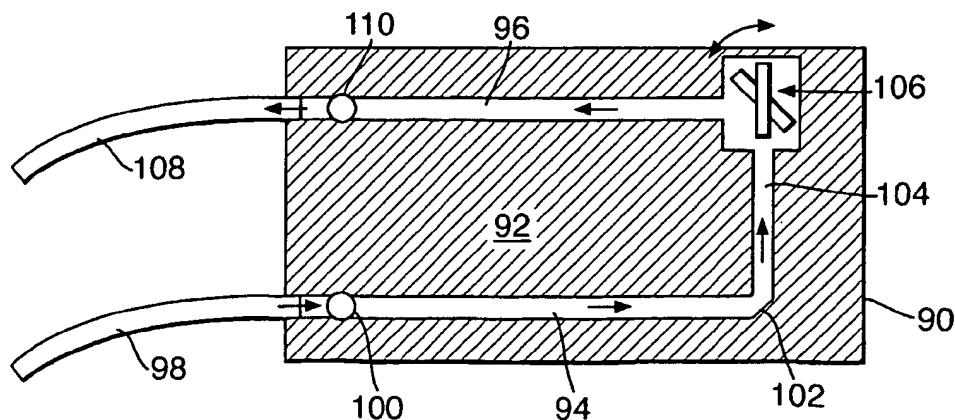
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(54) Title: **VARIABLE OPTICAL ATTENUATOR**



(57) Abstract: A variable optical attenuator (VOA) device (20; 40; 50; 90) is described that comprises a first optical waveguide (24; 52; 80; 94; 120; 140) and a second optical waveguide (26; 42; 54; 82; 96; 122; 142). A moveable reflective element (28; 84; 106; 124; 144), such as a micro-electro mechanical system (MEMS) based component, is provided that has a controllable orientation with respect to at least one of said first and second optical waveguides. The first and second waveguides are formed as hollow core optical waveguides.

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